



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
(Case No. 006420.00001)

In the Application of: )  
 )  
Abhijit De )  
 )  
Serial No.: 10/663,191 ) Group Art Unit: 1731  
 )  
Filed: September 16, 2003 ) Examiner: (TBA)  
 )  
For: Gum Based Chewing Product and Process )  
for Preparing the Same )

**SUBMISSION OF PRIORITY DOCUMENT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Applicant submits the attached Priority document for filing in the above-identified application. The attached certified copy of Indian Patent Application No. 543/CAL/2002 filed September 17, 2002. Applicants claim priority of September 17, 2002, the earliest filing date of the attached Indian application as referred to in the Declaration of this application.

Respectfully submitted,  
BANNER & WITCOFF, LTD.

Dated: January 6, 2004

By:

Robert H. Resis  
Reg. No. 32,168  
Direct Dial (312) 463-5405

**GOVERNMENT OF INDIA**  
**THE PATENT OFFICE**  
NIZAM PALACE, 2<sup>ND</sup> M.S.O. BUILDING  
234/4, ACHARYA JAGADISH BOSE ROAD  
KOLKATA – 700 020, INDIA.

**TO ALL TO WHOM THESE PRESENTS SHALL COME:**

**10<sup>th</sup> NOVEMBER, 2003.**


THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY OF  
THE COMPLETE SPECIFICATION OF THE BELOW IDENTIFIED  
PATENT APPLICATION NUMBER FILED AT PATENT OFFICE,  
KOLKATA, INDIA THAT MET THE REQUIREMENTS TO BE  
GRANTED A DOCUMENT UNDER SECTION 72 OF THE PATENTS  
ACT, 1970.



**PROVISIONAL PATENT APPLICATION NO: 543/CAL/2002**

**DATE OF FILING: SEPTEMBER 17, 2002**

**By Authority of the  
CONTROLLER GENERAL OF PATENTS,  
DESIGNS & TRADE MARKS.**

  
**( N. K. GUPTA )  
Certifying Officer**

10-7 SEP 2002

**FORM - 2**

THE PATENTS ACT, 1970

( 39 OF 1970 )

**COMPLETE SPECIFICATION**

( See Section 10 )

**1. TITLE OF INVENTION**

**GUM BASED CHEWING PRODUCT**

**De Dr. Abhijit**, of A/56, Arcon Complex, Barasat Road, Amarabati, Sodepur – 743 178,  
Dist 24 Parganas (N), State of West Bengal, India, an Indian Citizen

DUPLICATE

The following specification particularly describes the nature of the invention and the manner in which it is to be performed.

The present invention relates to a gum based product and a process for manufacturing the same. More particularly the invention relates to a gum based product with a synthetic or natural betel nut source, especially a chewing / bubble gum containing an alkaloid like such as nicotine or other such alkaloids like caeffine, theine etc from natural or synthetic origin for its source and a process for preparing the same.

### **BACK GROUND**

Tobacco flavoured chewing gum or chewing gum containing tobacco, which simulates chewing tobacco are known in the art and have been described in US patent nos. 3,877,468; 5,488,976; 4,317,837; 4,802,498; 4,093,752; 3,845,217; 865,026 and 904,521.

This tobacco-flavoured chewing gum is usually recommended for smokers as a substitute for smoking tobacco. US patent 3,877,468 and 5,488,962 disclosed chewing gum having variable amounts of nicotine. US patent 4,317,837 and 4,802,498 describe chewing gum wherein tobacco rather than nicotine is added to chewing gum. US 4,093,752 employs tobacco flavourings such as 2,4,6-triisobutyl 1-1,3,5-trioxane and US 3,845,217 employs buffered nicotine in chewing gum. Further mixtures of tobacco and wax are used in US patent nos. 865,026 and 904,521. The tobacco flavourings may be employed along with non-sweet taste or flavourings such as salt, pepper, sour, bitter, meaty, with or without sweetness as desired.

In the tropical Asian countries, chewing betel nut and tobacco in the form of areca quid is quite popular. This type of Areca quid mainly consists of Areca nut(betel nut), lime paste(in India known as chuna), a resinous extract from the matrix of Acacia tree(in India known as Kattha or catechu). All these are spread over betel leaf and the whole quid is consumed along with the betel leaf, which is known as 'pan' in India.

The consumption of betel nut and tobacco together in the form of Areca quid has many disadvantages like:

- i. it generates a bright thick red colored fluid which mixes with the saliva and has to be expectorated and causes pollution of the environment;
- ii. this type of Areca tobacco mixture mostly contains alkaline lime, which in long use could result in oral cancer
- iii. long use of such Areca / tobacco mixtures cause contraction of oral tissue which results in incapability of opening the mouth fully.

To overcome these Indian Patent No. 187110 granted to the applicant herein describes use of quimam and betel nut in chewing gum.

The present invention scores over the said patent No. 187110. It delivers nicotine source, prepared in a particular method, at a level of 1mg to 12.6 mg per chewing gum and has a better mixing capacity with the gum base. Moreover as the per chewing gum dose of nicotine is limited and can be chewed for a longer time a sustained effect is achieved though the overall consumption of nicotine is less. Moreover the product smoothness is much higher as well as saliva generation in the present chewing gum is much lesser.

### **SUMMARY OF INVENTION**

The present invention relates to a gum product comprising :

12-35% by weight of a gum base in the form of dough;

0.5-7.0% by weight of a plasticizer;

0.05 to 5.75% by weight of a nicotine source;

35-65% by weight of a filler;

1.5-9% by weight of betel nut powder having average particle size of between 45 $\mu$ m to 710 $\mu$ m

0.1 to 3.0 % by weight of one or more flavouring agent;

said chewing gum being in the form of gum pieces adapted to deliver 1.0 to 12.6 mg of nicotine per piece.

According to further aspect of the present invention there is provided a process for preparing the gum product with nicotine source comprising :

- i) providing a mixture comprising 12-35% by weight of chewing gum base, 0.5-7.0% by weight of plasticizer, 3-30% by weight of dough forming medium, filler, 1.5-9% by weight of betel nut powder having average particle size of between 45 $\mu$ m to 710 $\mu$ m;
- ii) heating the mixture to a temperature between 45°C to 65°C to soften the gum base and form a dough;
- iii) adding from 0.05 to 5.75% by weight of nicotine source to the dough;
- iv) adding 0.1 to 3.0% by weight of one or more flavouring agent such as herein described followed by addition of a further amount of filler and mixing the mass thoroughly to obtain the chewing gum;
- v) converting the said mass into chewing gum pieces containing nicotine at a level of 1.0 to 12.6 mg per piece.

The gum used for the purpose of the present invention is the which for the active components and is selected from chewing gum, bubble gum and other gums.

### **DETAILED DESCRIPTION OF THE INVENTION**

The invention is described with specific reference to chewing gum although other gums may be used.

The present invention provides a betel nut containing chewing gum with nicotine source which has a lingering effect of the nicotine though the per chewing gum consumption of nicotine is limited. It also provides product smoothness. The saliva generation associated with the betel nut chewing gum with nicotine source of the present invention is also less than intake of areca quid and chewing gum with quimam.

According to a preferred aspect the said betel-nut chewing gum with nicotine source further comprises from 0.02 to 7.5% by weight of sweetening agent wherein the sweetening agent is selected from Aspartame, mannitol, powdered sugar and the like.

The said chewing gum preferably comprises :

- 25-34% by weight of a chewing gum base in the form of dough;
- 1-1.5% by weight of plasticizer;
- 3 to 3.5% by weight of nicotine source;
- 35-55% by weight of filler;
- 4-6% by weight of betel nut powder of average particle size ranging from 45 $\mu$ m to 710 $\mu$ m;
- 0.1-6% by weight of sweetening agent;
- 0.1 to 1.5 % by weight of peppermint source and/or any other flavouring agent such as herein described ;
- said chewing gum having shaped of sizes adapted to deliver 1.0 to 7 mg of nicotine per piece of chewing gum.

The plasticizer in the said product with nicotine source is propylene glycol or glycerin and the dough forming medium is selected from liquid sorbitol, maltitol syrup, liquid glucose and like while the filler in the said product is powdered D-Sorbitol or powdered sugar.

The flavouring agent in the said product is selected from germanium oil, cardamom flavour, saffron flavour, clove oil, cinnamon flavour, tobacco flavour A, tobacco flavour B, tobacco flavour C, cardamom powder, menthol powder or mentha piperita oil as peppermint source.

The said flavouring agents are added in the following proportions:

<u>Flavouring agent</u>	<u>Range (% by wt)</u>
Germanium oil	0.7-0.9
Cardamom flavour	2-3
Saffron flavour	0.15-0.35

<u>Flavouring agent</u>	<u>Range (% by wt)</u>
Clove oil	0.15-0.35
Cinnamon flavour	0.5-0.6
Tobacco flavour A	0.5-3.5
Tobacco flavour B	1.0-4.5
Tobacco flavour C	0.5- 1.5
Cardamom powder	0.5-1.5
Peppermint source	0.5-2.0

The preferred range of one or more flavouring agent added is as follows:

<u>Flavouring agent</u>	<u>Preferred range (% by wt)</u>
Germanium oil	0.75 –0.85
Cardamom flavour	2.0 –3.0
Saffron flavour	0.2 – 0.3
Clove oil	0.2 –0.3
Cinnamon flavour	0.5 –0.6
Tobacco flavour A	2.2 – 3.0
Tobacco flavour B	3.0 – 3.5
Tobacco flavour C	0.8 – 1.2
Cardamom powder	0.8 – 1.2
Peppermint source	0.8 – 1.2

The nicotine source used in the present invention may be prepared by conventional methods. But according to preferred aspect of the present invention the process for preparing the nicotine source to be used in the said gum product comprises:

- filling up fine scrap of tobacco in a metallic column ;
- passing steam through the column and collecting the condensed extract of tobacco at the bottom of the column;
- continuing the cycle till the extraction is complete;



passing the collected extract through 'falling film evaporator' to concentrate the extract to 35% of the initial tobacco weight; cooling to room temperature and adding required flavouring agents as described herein.

The process for preparing betel-nut containing chewing gum with nicotine source as described herein further comprising of gradually adding 0.02-7.5 %by weight of sweetening agent selected from Aspartame; mannitol powdered sugar and the like.

The preferred aspect of the said process for preparing chewing gum comprises:

- i) providing a mixture comprising 25-34% by weight of chewing gum base, 1-1.5% by weight of plasticizer, 6-22 % by weight of dough forming medium, a filler, 4-6% by weight of betel nut powder of average particle size ranging from 45 $\mu$ m to 710 $\mu$ m, 0.1-6% by weight of sweetening agent,
- ii) heating to a temperature between 45°C to 60°C to soften the gum base to form a dough;
- iii) adding 3 to 3.5% by weight of nicotine source of a type obtained by a process such as herein described to the dough;
- iv) adding 0.1 to 1.5 % by weight of peppermint source or any other flavouring agent such as herein described followed by addition of further amount of filler and mixing it thoroughly to obtain the chewing gum ;
- v) converting the said mass into chewing gum pieces so as to deliver 1.0 to 7mg of nicotine per piece of chewing gum.

After addition of the nicotine source the mass is preferably reheated for uniform mixing of the nicotine source in the dough.

The filler is incorporated in the mix at a level of between 15-80% of the total filler to be present in the chewing gum and at a subsequent stage adding the balance filler in an amount of between 20-85%.

The formation of the said chewing gum pieces is preferably done by spreading the said chewing gum mass obtained at the step (iv) of the process of preparation in the form of a sheet of uniform thickness and cut into shaped pieces of sizes adapted to deliver 1.0 to 12.6 mg, preferably 1-7mg of nicotine per dose of chewing gum.

The dough forming medium used in the said process is selected from liquid sorbitol, maltitol syrup, liquid glucose and like, while the filler used is powdered D-Sorbitol, powdered sugar and the plasticizer used is propylene glycol or glycerin.

The invention shall now be described with reference to exemplary illustrations:

### **PROCESS FOR PREPARING NICOTINE SOURCE**

The process for preparing nicotine source to be used in the preparation of the chewing gum comprises of:

- filling up fine scrap of tobacco in a metallic column ;
- passing stream through the column and collecting the condensed extract of tobacco at the bottom of the column;
- continuing the cycle till the extraction is complete;
- passing the collected extract through 'falling film evaporator' to concentrate the extract to 35% of the initial tobacco weight;
- cooling to room temperature ; and adding required flavouring agents.

The flavouring agent used in the nicotine source is selected from germanium oil, cardamom flavour, saffron flavour, clove oil, cinnamon flavour, tobacco flavour A, tobacco flavour B, tobacco flavour C, cardamom powder, menthol powder or mentha piperita oil as peppermint source.

The one or more flavouring agent used are added in the following proportions:

<u>Flavouring agent</u>	<u>Range (% by wt)</u>
Germanium oil	0.7-0.9
Cardamom flavour	2-3
Saffron flavour	0.15-0.35
Clove oil	0.15-0.35
Cinnamon flavour	0.5-0.6
Tobacco flavour A	0.5-3.5
Tobacco flavour B	1.0-4.5
Tobacco flavour C	0.5- 1.5
Cardamom powder	0.5-1.5
Peppermint source	0.5-2.0

The preferred range of one or more flavouring agent used is as follows:

<u>Flavouring agent</u>	<u>Preferred range (% by wt)</u>
Germanium oil	0.75 –0.85
Cardamom flavour	2.0 –3.0
Saffron flavour	0.2 – 0.3
Clove oil	0.2 –0.3
Cinnamon flavour	0.5 –0.6
Tobacco flavour A	2.2 – 3.0
Tobacco flavour B	3.0 – 3.5
Tobacco flavour C	0.8 – 1.2
Cardamom powder	0.8 – 1.2
Peppermint source	0.8 – 1.2

### **Example 1**

#### **CHEWING GUM COMPOSITION :**

The composition of chewing gum is as follows :

Gum base 30% by weight

Plasticizer (propylene glycol or glycerin) 1.0% by weight

Dough forming medium (liquid sorbitol 70%) 13.0% by weight

Nicotine source 3.2% by weight

Filler ( powdered D-Sorbitol) 47.7% by weight

Betel nut powder (45 $\mu$ m to 710 $\mu$ m) 4.5% by weight

Sweetening agent (Aspartame or any other material providing required sweetness) 0.1% by weight

Pepper mint 0.5% by weight and/or any other flavouring agents and mixing it thoroughly.

#### **PREPARATION OF CHEWING GUM :**

To prepare the chewing gum of this composition the following process is followed:

- i) mixing chewing gum base, plasticizer, dough forming medium, a portion of filler, betel nut powder and sweetening agent;
- ii) heating the above mixture at 45°C to soften the gum base to form a dough;
- iii) adding the nicotine source prepared by the method as described above to the dough and reheating the dough for uniform mixing of the nicotine source in the dough;
- iv) adding peppermint and any other flavouring agent and mixing thoroughly;
- v) gradually adding the remaining portion of the filler to obtain the tobacco chewing gum mass;

- vi) spreading the said chewing gum mass in the form of a sheet of uniform thickness and cut into rectangular or any other shaped pieces. The cut pieces are wrapped in wax paper / aluminum foil for airtight packing. The nicotine source used will deliver 1.0 mg to 12.6 mg of nicotine per dose i.e. per piece of chewing gum.

## **Example 2**

### **COMPOSITION OF CHEWING GUM :**

The composition of chewing gum is as follows :

Gum base 32.5% by weight

Plasticizer (propylene glycol or glycerin) 1.0% by weight

Dough forming medium (Maltitol syrup) 6.5% by weight

Nicotine source 3.2% by weight

Filler ( powdered D-Sorbitol) 50.8% by weight

Betel nut powder (45 $\mu$ m to 710 $\mu$ m) 5.0% by weight

Pepper mint 1.0% by weight and / or any other flavouring agents and mixing it thoroughly.

### **PREPARATION OF CHEWING GUM :**

To prepare the chewing of this composition the following process is followed:

- i) mixing chewing gum base, plasticizer, dough forming medium, a portion of filler and betel nut powder;
- ii) heating the above mixture at 55°C to soften the gum base to form a dough;
- iii) adding the nicotine source prepared by the method as described above to the dough and reheating the dough for uniform mixing of the nicotine source in the dough;

- iv) adding peppermint and any other flavouring agent and mixing thoroughly;
- v) gradually adding the remaining portion of filler to obtain the chewing gum mass;
- vi) spreading the said chewing gum mass in the form of a sheet of uniform thickness and cut into rectangular or any other shaped pieces. The cut pieces are wrapped in wax paper / aluminum foil for airtight packing. The nicotine source used will deliver 1.0 mg to 12.6 mg of nicotine per dose i.e. per piece of chewing gum.

### **Example 3**

#### **COMPOSITION OF CHEWING GUM :**

The composition of chewing gum is as follows :

Gum base 34 % by weight

Plasticizer (propylene glycol or glycerin) 1.5% by weight

Dough forming medium (maltitol syrup) 15.0% by weight

Nicotine source 3.2% by weight

Filler ( powdered D-Sorbitol) 35% by weight

Betel nut powder (45 $\mu$ m to 710 $\mu$ m) 5% by weight

Sweetening agent (Mannitol or any other material providing required sweetness) 5.55% by weight

Pepper mint 0.75% by weight and / or other flavouring.

#### **PREPARATION OF CHEWING GUM :**

To prepare the chewing of this composition the following process is followed:

- i) mixing chewing gum base, plasticizer, dough forming medium, a portion of filler, betel nut powder and sweetening agent;

- ii) heating the above mixture at 55°C to soften the gum base to form a dough;
- iii) adding the nicotine source prepared by the method as described above to the dough and reheating the dough for uniform mixing of the nicotine source in the dough;
- iv) adding peppermint and any other flavouring agent and mixing thoroughly;
- v) gradually adding the remaining portion of filler to obtain the chewing gum mass;
- vi) spreading the said chewing gum mass in the form of a sheet of uniform thickness and cut into rectangular or any other shaped pieces. The cut pieces are wrapped in wax paper / aluminum foil for airtight packing. The nicotine source used will deliver 1.0 mg to 12.6 mg of nicotine per dose i.e. per piece of chewing gum.

#### **Example 4**

##### **COMPOSITION OF CHEWING GUM :**

The composition of chewing gum is as follows :

Gum base 25.1% by weight

Plasticizer (propylene glycol or glycerin) 1.0% by weight

Dough forming medium (liquid glucose) 20.8% by weight

Nicotine source 3.2% by weight

Filler (powdered sugar) 45.0% by weight

Betel nut powder (45µm to 710µm) 4.4% by weight

Peppermint 0.5% by weight. and / or any other flavouring agents and mixing it thoroughly.

##### **PREPARATION OF CHEWING GUM :**

To prepare the chewing gum of this composition the following process is followed:

- i) mixing chewing gum base, plasticizer, dough forming medium, a portion of filler, betel nut powder;
- ii) heating the above mixture at 50°C to soften the gum base to form a dough;
- iii) adding the nicotine source prepared by the method as described above to the dough and reheating the dough for uniform mixing of the nicotine source in the dough;
- iv) adding peppermint and any other flavouring agent and mixing thoroughly;
- v) gradually adding the remaining portion of the filler to obtain the chewing gum mass;
- vi) spreading the said chewing gum mass in the form of a sheet of uniform thickness and cut into rectangular or any other shaped pieces. The cut pieces are wrapped in wax paper / aluminum foil for airtight packing. The nicotine source used will deliver 1.0mg to 12.6 mg of nicotine per dose i.e. per piece of chewing gum.

The chewing gum of examples 1, 2, 3 and 4 are compared with chewing gum of the following example A taken as control.

To make an evaluation of the product according to the present invention chewing gum prepared by the process of examples 1, 2, 3 and 4. A control sample A was prepared by the method as follows.

20.8 gm of chewing gum base, 20.8 gm of liquid glucose, 24.55 gm of powdered sugar and 4.4 gm of betel nut powder are mixed together. The mixture is heated at 65°C to soften the gum base to form dough;

4.4gm of quimam is added to the dough and reheating the dough for uniform mixing of the quimam and dough;

0.5 gm of peppermint is added and mixed thoroughly.



a further amount of 24.55 gm of powdered sugar is added gradually to the mixture to obtain the chewing gum mass

The chewing gum mass in the form of a sheet of uniform thickness is cut into rectangular or any other shaped pieces. The cut pieces are wrapped in wax paper / aluminum foil for air tight packing

The evaluation was made taking the factors of product smoothness, saliva generation per dose, lingering effect, nicotine intake /day. A panel of 10 nicotine consumers with intake of nicotine between 70 to 105 mg of nicotine per day divided into 10 to 12 doses through various nicotine containing products other than smoking, were used for the purpose of evaluation.

The chewing gum of the present invention as in examples 1, 2, 3 and 4 are compared with the control example A for the following attributes:

ATTRIBUTES	EXAMPLE 1	EXAMPLE 2	EXAMPLE 3	EXAMPLE 4	EXAMPLE A
Product Smoothness <sup>1</sup>	90	78	87	84	60
Saliva generation/ Dose <sup>2</sup>	8cc	9cc	10cc	10cc	15 cc
Lingering Effect <sup>3</sup>	120 minutes	95 minutes	110 minutes	100minutes	90 minutes
Nicotine intake/day <sup>4</sup>	52.5 mg	61.9 mg	57.3 mg	58.7 mg	70 mg

### PRODUCT SMOOTHNESS

- 1- Product Smoothness is an attribute that is related to the degree at which the nicotine is absorbed into the system giving the user the feel. In a scale of 100 example 1 delivers a

smoothness of 90, example 2 a smoothness of 78, example 3 and 4 delivers a smoothness of 87 and 84 respectively which are much higher than that delivered by control example A which is 60.

### **SALIVA GENERATION**

- 2- Saliva Generation is the saliva formed during intake of the chewing gum. Example 1 leads to saliva generation of 8cc, example 2 to saliva generation of 9cc, example 3 and 4 leads to saliva generation of 10 cc which are much lower than that by control example A which is 15cc.

### **LINGERING EFFECT**

- 3- The lingering effect is the time interval when the user feels the urge to take another dose of nicotine product. The effect of the chewing gum lingers for 120 minutes in example 1, 95 minutes for example 2, 110 and 100 minutes for example 3 and 4 respectively which are much higher than the control example A where effect lingers for only 90 minutes

The lingering effect being higher for the examples 1, 2, 3 and 4 the intake of chewing gum and in the effect nicotine intake/ day is lesser than the control example A. The values of nicotine intake/day being 52.5 mg in example 1, 61.9mg in example 2, 57.3 mg in example 3, 58.7 mg in example 4 while it is 70 mg in example A.

Thus we find that the betel nut containing chewing gum with nicotine source of the present invention is superior to the control.

The gum product of the present invention may be used for other commercial and medicinal applications by incorporating appropriate actives such as caffeine and other alkaloids together with suitable additives.

**I CLAIM:**

1. A gum product comprising :  
12-35% by weight of a gum product base in the form of dough;  
0.5-7.0% by weight of a plasticizer;  
0.05 to 5.75% by weight of a nicotine source;  
35-65% by weight of a filler;  
1.5-9% by weight of betel nut powder having average particle size of between 45 $\mu$ m to 710 $\mu$ m  
0.1 to 3.0 % by weight of one or more flavouring agent;  
said gum product being in the form of gum pieces adapted to deliver 1.0 to 12.6 mg of nicotine per piece.
2. A gum product as claimed in claim 1 further comprising from 0.02 to 7.5% by weight of sweetening agent.
3. A gum product as claimed in any one of claim 1 or 2 comprising :  
25-34% by weight of a gum base in the form of dough;  
1-1.5% by weight of plasticizer;  
3 to 3.5% by weight of nicotine source;  
35-55% by weight of filler;  
4-6% by weight of betel nut powder of average particle size ranging from 45 $\mu$ m to 710 $\mu$ m;  
0.1-6% by weight of sweetening agent;  
0.1 to 1.5 % by weight of peppermint source and any other flavouring agent such as herein described ;  
said gum product being in the form of gum pieces having a rectangular or any other shape and adapted to deliver 1.0 to 7 mg of nicotine per piece.
4. A gum product as claimed in any of the preceding claim wherein the plasticizer is propylene glycol or glycerin.

5. A gum product as claimed in any of the preceding claim wherein the filler is powdered D-Sorbitol, powdered sugar.
6. A gum product as claimed in any of claims 4-5, wherein the sweetening agent is selected from Aspartame, mannitol, powdered sugar and the like.
7. A gum product as claimed in any of the preceding claim wherein the flavouring agent is selected from germanium oil, cardamom flavour, saffron flavour, clove oil, cinnamon flavour, tobacco flavour A, tobacco flavour B, tobacco flavour C, cardamom powder, menthol powder or mentha piperita oil as peppermint source.
8. A gum product as claimed in claim 7, wherein one or more flavouring agent are selected from :

<u>Flavouring agent</u>	<u>Range (% by wt)</u>
Germanium oil	0.7-0.9
Cardamom flavour	2-3
Saffron flavour	0.15-0.35
Clove oil	0.15-0.35
Cinnamon flavour	0.5-0.6
Tobacco flavour A	0.5-3.5
Tobacco flavour B	1.0-4.5
Tobacco flavour C	0.5- 1.5
Cardamom powder	0.5-1.5
Peppermint source	0.5-2.0

9. A gum product as claimed in claim 8, wherein one or more flavouring agent are selected from :

<u>Flavouring agent</u>	<u>Preferred range (% by wt)</u>
Germanium oil	0.75 –0.85
Cardamom flavour	2.0 –3.0

Flavouring agentPreferred range (% by wt)

Saffron flavour	0.2 – 0.3
Clove oil	0.2 – 0.3
Cinnamon flavour	0.5 – 0.6
Tobacco flavour A	2.2 – 3.0
Tobacco flavour B	3.0 – 3.5
Tobacco flavour C	0.8 – 1.2
Cardamom powder	0.8 – 1.2
Peppermint source	0.8 – 1.2

10. A gum product as claimed in claims 1-9, wherein the gum product is a chewing gum, bubble gum and the like.
11. A gum product as claimed in claim 10, wherein the gum product is a chewing gum.
12. A process for preparing gum product comprising :
  - i) providing a mixture comprising 12-35% by weight of gum base, 0.5-7.0% by weight of plasticizer, 3-30% by weight of dough forming medium, a filler, 1.5-9% by weight of betel nut powder average particular size ranging from 45µm to 710µm;
  - ii) heating the mixture to a temperature between 45°C to 65°C to soften the gum base and form a dough;
  - iii) adding from 0.05 to 5.75% by weight of nicotine source to the dough;
  - iv) adding 0.1 to 3.0% by weight of one or more flavouring agent such as herein described followed by addition of a further amount of filler and mixing the mass thoroughly to obtain the gum;
  - v) converting the said mass into gum pieces containing nicotine at a level of 1.0 to 12.6 mg per piece.

13. A process for preparing gum product as claimed in claim 12 further comprising gradually adding 0.02-7.5% by weight of sweetening agent selected from Aspartame, mannitol, powdered sugar and the like.
14. A process for preparing gum product as claimed in claim 12 or 13 comprising:
  - i) providing a mixture comprising 25-34% by weight of gum base, 1-1.5% by weight of plasticizer, 6-22% by weight of dough forming medium, a filler, 4-6% by weight of betel nut powder of average particle size ranging from 45 $\mu$ m to 710 $\mu$ m, 0.1-6% by weight of sweetening agent;
  - ii) heating to a temperature between 45°C to 60°C to soften the gum base to form a dough;
  - iii) adding 3 to 3.5% by weight of nicotine source to the dough;
  - iv) adding 0.1 to 1.5 % by weight of peppermint source or any other flavouring agent such as herein described followed by addition of a further amount of filler and mixing the mass thoroughly to obtain the gum;
  - v) converting the said mass into gum pieces containing nicotine at a level of 1.0 to 7 mg per piece.
15. A process for preparing gum product as claimed in claim 14, wherein the gum product is chewing gum, bubble gum and the like.
16. A process for preparing gum product as claimed in claim 15, wherein the gum product is chewing gum.
17. A process for preparing gum product as claimed in claim 12-16, wherein the dough is reheated following addition of nicotine source for uniform mixing of the nicotine source with the dough.
18. A process for preparing gum product as claimed in claim 12-17, wherein the filler is incorporated in the mix at a level of between 15-80% of the total filler to be present in

the chewing gum and at a subsequent stage adding the balance filler in an amount of between 20-85%.

19. A process for preparing gum product as claimed in claim 12-18, wherein the said gum pieces are formed by spreading the mass obtained in step iv) of the process in the form of a sheet of uniform thickness and cut into shaped pieces of size adapted to deliver the said amount of nicotine per piece of chewing gum.
20. A process for preparing gum product as claimed in claims 12-19, wherein the flavouring agent is selected from germanium oil, cardamom flavour, saffron flavour, clove oil, cinnamon flavour, tobacco flavour A, tobacco flavour B, tobacco flavour C, cardamom powder, menthol powder or mentha piperita oil as peppermint source.
21. A process for preparing gum product as claimed in claim 20, wherein one or more flavouring agent are selected from :

<u>Flavouring agent</u>	<u>Range (% by wt)</u>
Germanium oil	0.7-0.9
Cardamom flavour	2-3
Saffron flavour	0.15-0.35
Clove oil	0.15-0.35
Cinnamon flavour	0.5-0.6
Tobacco flavour A	0.5-3.5
Tobacco flavour B	1.0-4.5
Tobacco flavour C	0.5- 1.5
Cardamom powder	0.5-1.5
Peppermint source	0.5-2.0

22. A process for preparing gum product as claimed in claim 21, wherein one or more flavouring agent are selected from :

<u>Flavouring agent</u>	<u>Preferred range (% by wt)</u>
Germanium oil	0.75 - 0.85
Cardamom flavour	2.0 - 3.0
Saffron flavour	0.2 - 0.3
Clove oil	0.2 - 0.3
Cinnamon flavour	0.5 - 0.6
Tobacco flavour A	2.2 - 3.0
Tobacco flavour B	3.0 - 3.5
Tobacco flavour C	0.8 - 1.2
Cardamom powder	0.8 - 1.2
Peppermint source	0.8 - 1.2

23. A process for preparing gum product as claimed in claims 12-22, wherein the plasticizer is propylene glycol or glycerin.
24. A process for preparing gum product as claimed in claims 12-23, wherein the dough forming medium is selected from liquid sorbitol, maltitol syrup, liquid glucose and like.
25. A process for preparing gum product as claimed in claims 12-24, wherein the filler is selected from powdered D-Sorbitol, powdered sugar and the like.
26. A process for preparing gum product as claimed in any of the preceding claim wherein the said nicotine source is prepared by a process comprising:
  - filling up fine scrap of tobacco in a metallic column ;
  - passing stream through the column and collecting the condensed extract of tobacco at the bottom of the column;
  - continuing the cycle till the extraction is complete;
  - passing the collected extract through a falling film evaporator to concentrate the extract to 35% of the initial tobacco weight;



cooling to room temperature ; and adding said flavouring agents.

27. A gum product substantially as herein described with reference to the description and the examples.
28. A process for preparing gum product substantially as herein described with reference to the description and the examples

Dated this 17<sup>th</sup> day of September 2002.



S. MAJUMDAR  
of S. MAJUMDAR & CO.  
Applicants' Agent

**ABSTRACT**

The present invention relates to a gum based chewing product. The gum based product contains a synthetic or natural betel nut source, especially a chewing / bubble gum containing an alkaloid like such as nicotine or other such alkaloids like caeffine, theine etc from natural or synthetic origin for its source and a process for preparing the same The gum product of the invention has high smoothness and the saliva generation is much less. The gum pieces deliver 1 to 12.6 mg of nicotine per piece.

To  
The Controller of Patents  
The Patent Office  
At Calcutta